Inventor(s): Anthony C. Bono Attorney: Scott D. Sanford Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 1 of 35

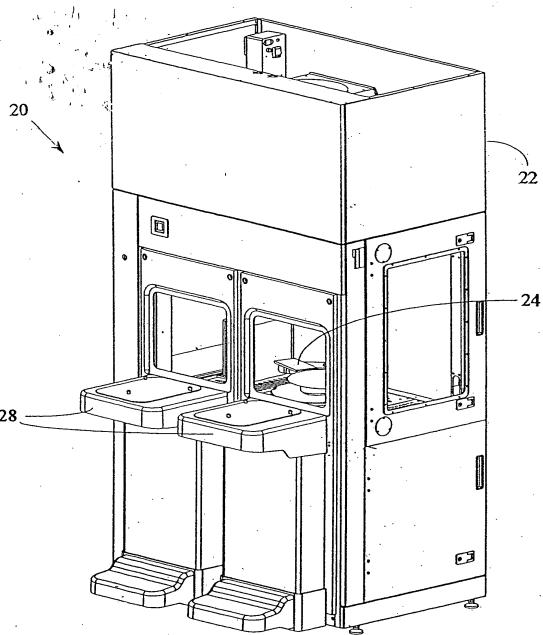
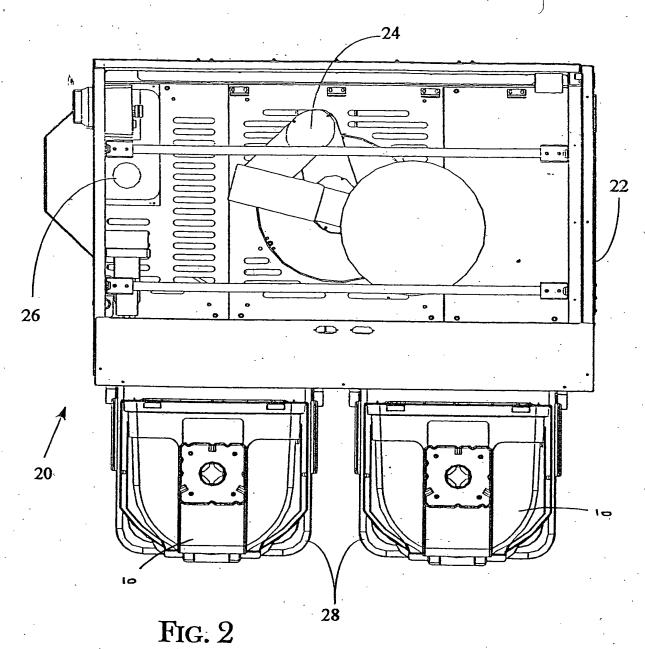


Fig. 1

TOCETHOD DECIDE

Inventor(s): Anthony C.
Attorney: Scott D. Sail
Phone: (415) 362-3600
Express Mail No.: EL670726207US
Sheet 2 of 35



WAFER ENGINE ASYS8196US0 Title: Dog Ser Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony C. E
Attorney: Scott D. Sanfo
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 3 of 35

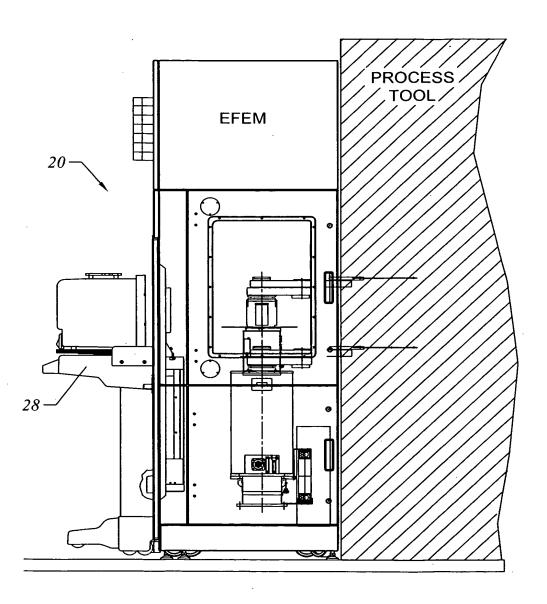
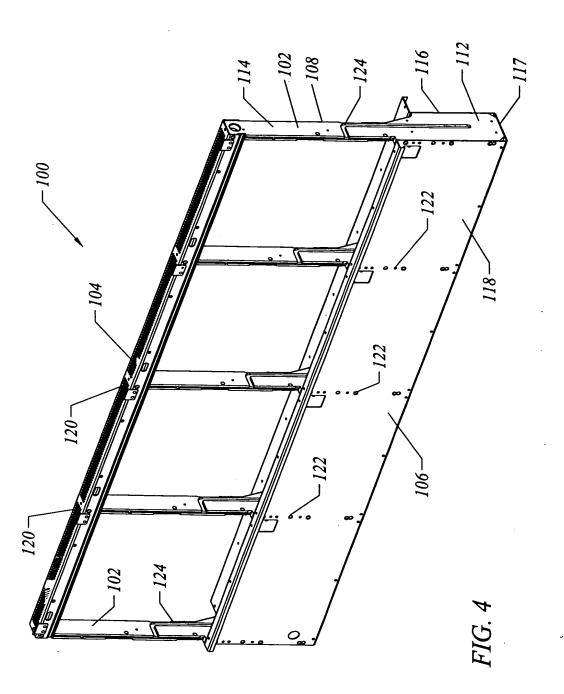


FIG. 3

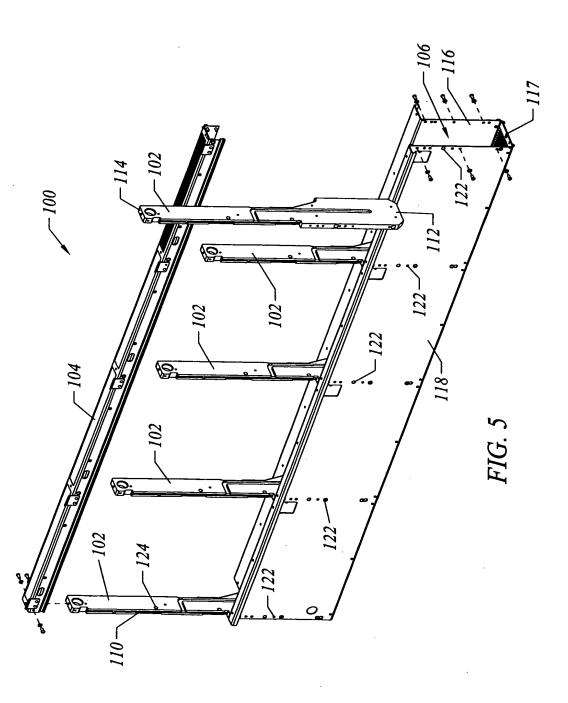
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Dock ASYS8196US0
Seria Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony C. Bo Attorney: Scott D. Sanfor Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 4 of 35



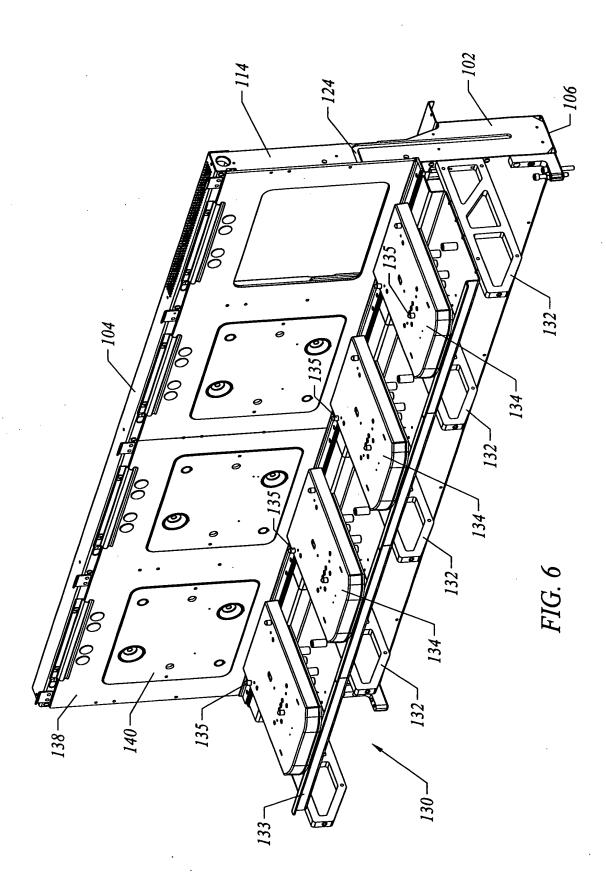
WAFER ENGINE
No.: ASYS8196US0
St. No.: Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony Coura et al Attorney: Scott D. Sa. Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 5 of 35



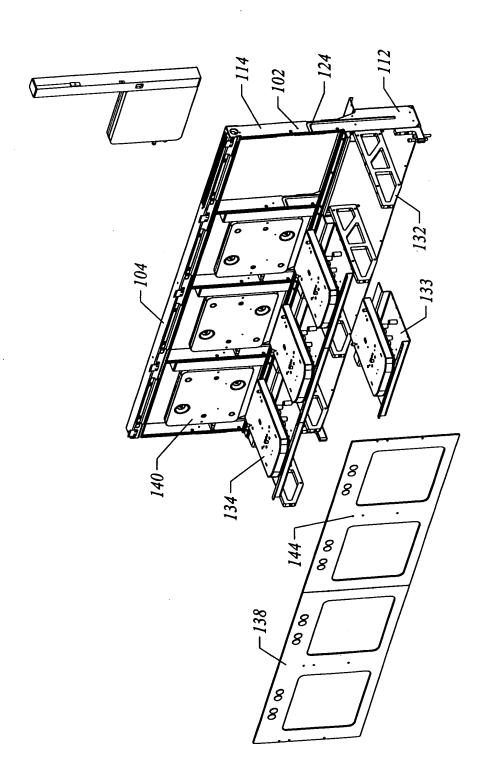
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Do :: ASYS8196US0
Seri :: Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony C. E
Attorney: Scott D. Sanfol
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 6 of 35

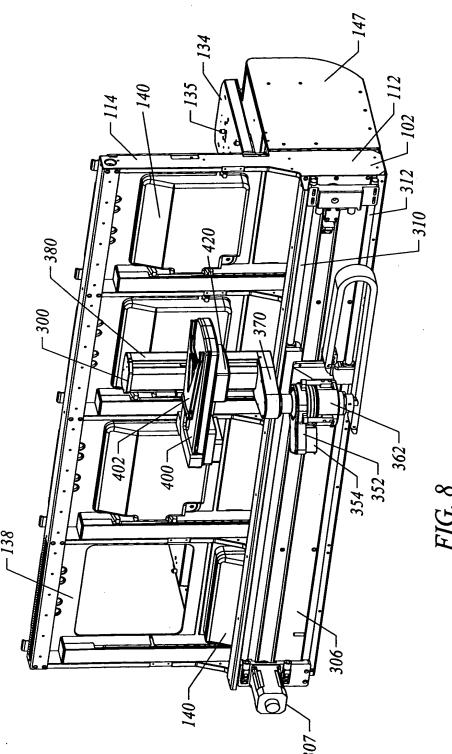


Title WAFER ENGINE
DO O.: ASYS8196USO
Ser O.: Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony C. I
Attorney: Scott D. Sanfo.
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 7 of 35



Inventor(s): Anthony C. Bo
Attorney: Scott D. Sanford
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 8 of 35



Title: WAFER ENGINE
Do o.: ASYS8196US0
Ser ..: Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony C. I Attorney: Scott D. Sant Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 9 of 35

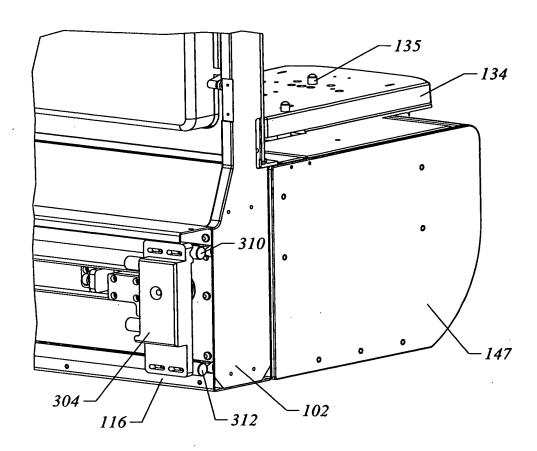
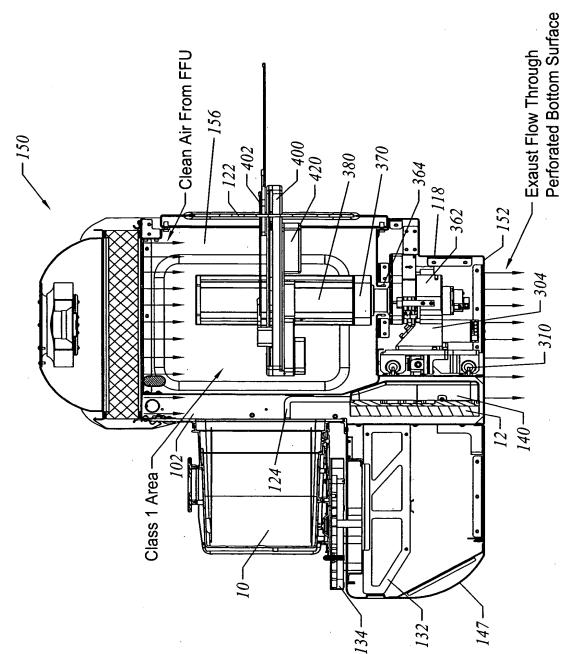


FIG. 9

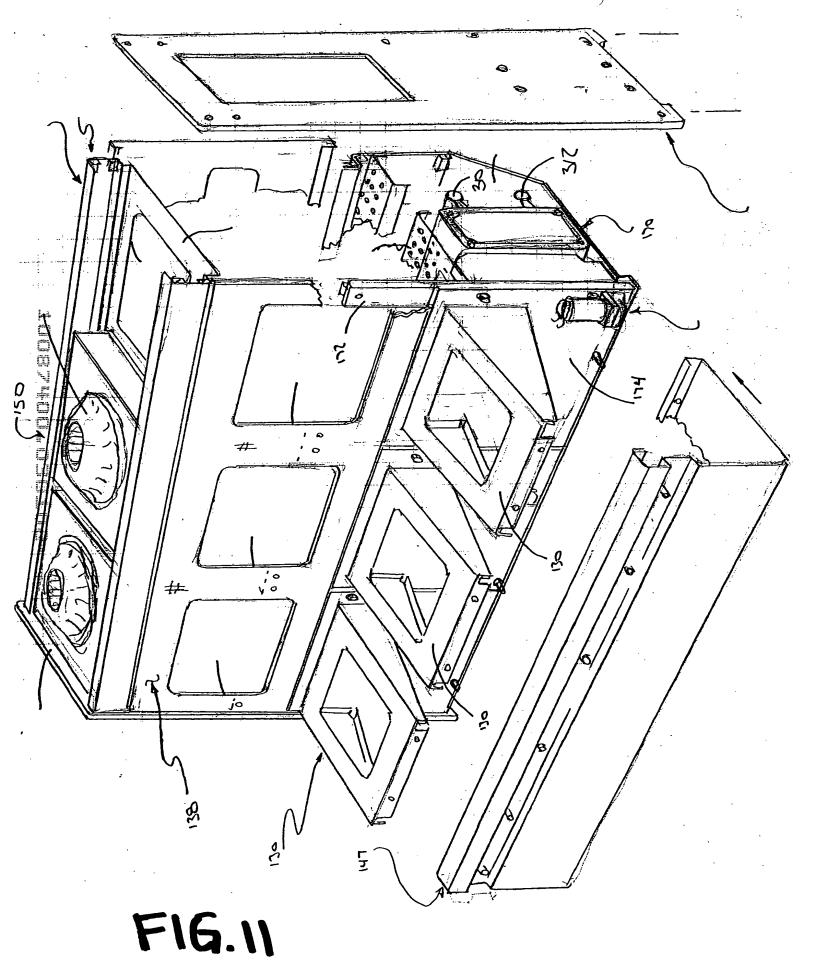
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Inventor(s): Anthony C.
Attorney: Scott D. San
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 10 of 35 et al.



WAFER ENGINE ASYS8196US0 Unknown Title: Dock Seria Confi Filed: Unknown Herewith

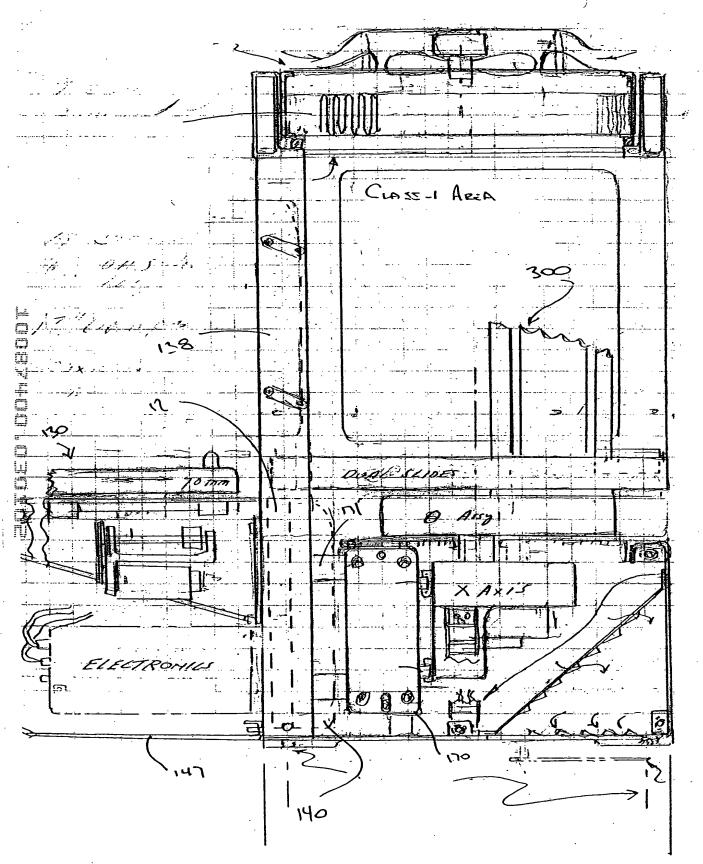
Inventor(s): Anthony C. Boy Attorney: Scott D. Sanfor al. Phone: (415) 362-3806 Express Mail No.: EL670726207US Sheet 11 of 35



Title: WAFER ENGINE
DY No.: ASYS8196US0
School: Unknown
Control No: Unknown
Filed: Herewith

Inventor(s): Anthony C. Attorney: Scott D. Sanl Phone: (415) 362-3800 Express Mail No.: EL670726207US

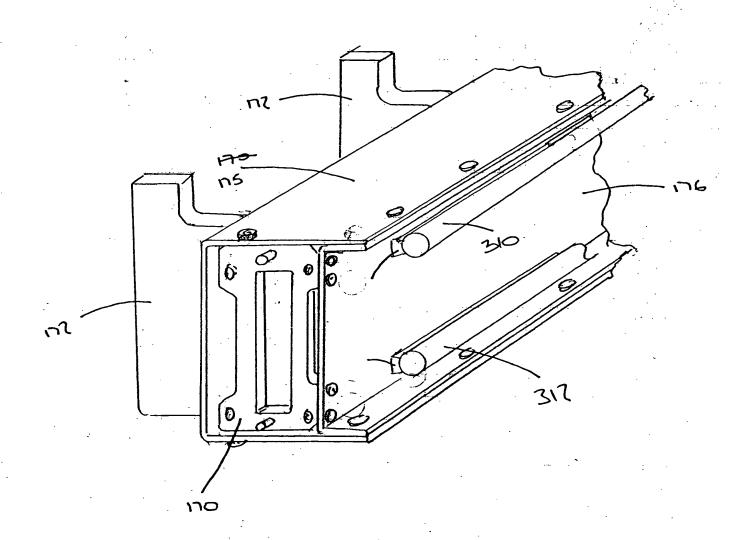
Sheet 12 of 35



F16. 12

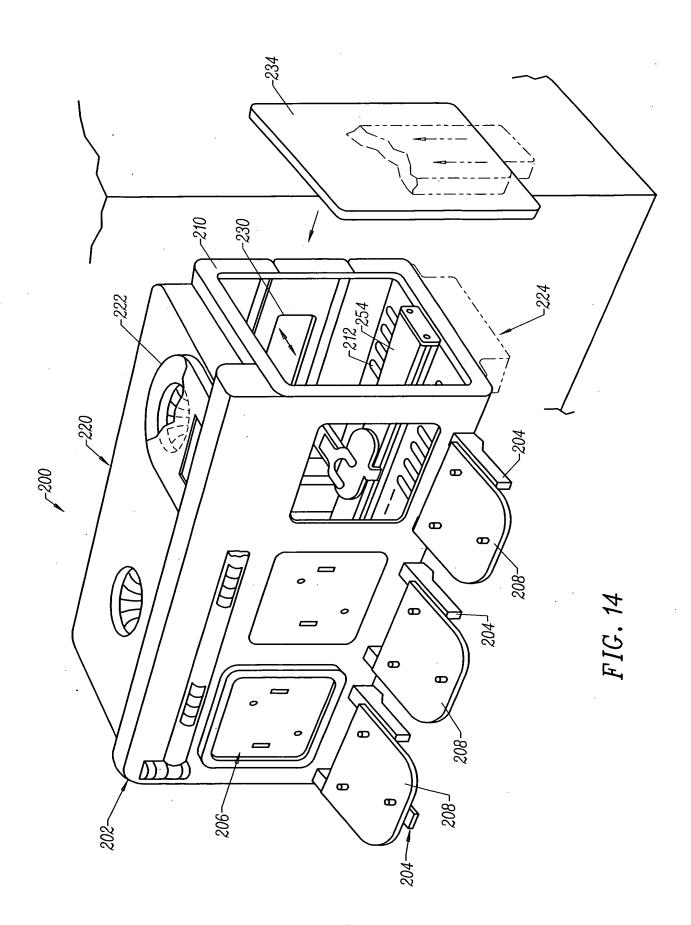
WAFER ENGINE ASYS8196USO Jnknown Unknown Herewith Title: Docket Serial N Confirm Filed:

Inventor(s): Anthony C. Bono
Attorney: Scott D. Sanford
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 13 of 35



Title: WAFER ENGINE No.: ASYS8196US0 o.: Unknown n No: Unknown Herewith Co. Filed:

Inventor(s): Anthony C.
Attorney: Scott D. Sai
Phone: (415) 362-3600
Express Mail No.: EL670726207US
Sheet 14 of 35



Title: WAFER ENGINE
t No.: ASYS8196US0
No.: Unknown
Commm No: Unknown
Filed: Herewith

Inventor(s): Anthony Cora et al Attorney: Scott D. S. Phone: (415) 362-3600 Express Mail No.: EL670726207US Sheet 15 of 35

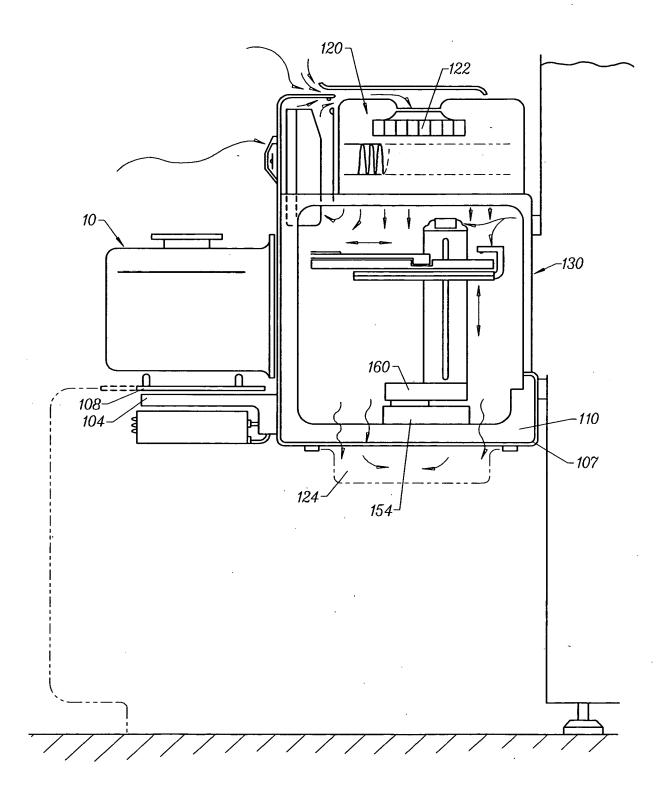
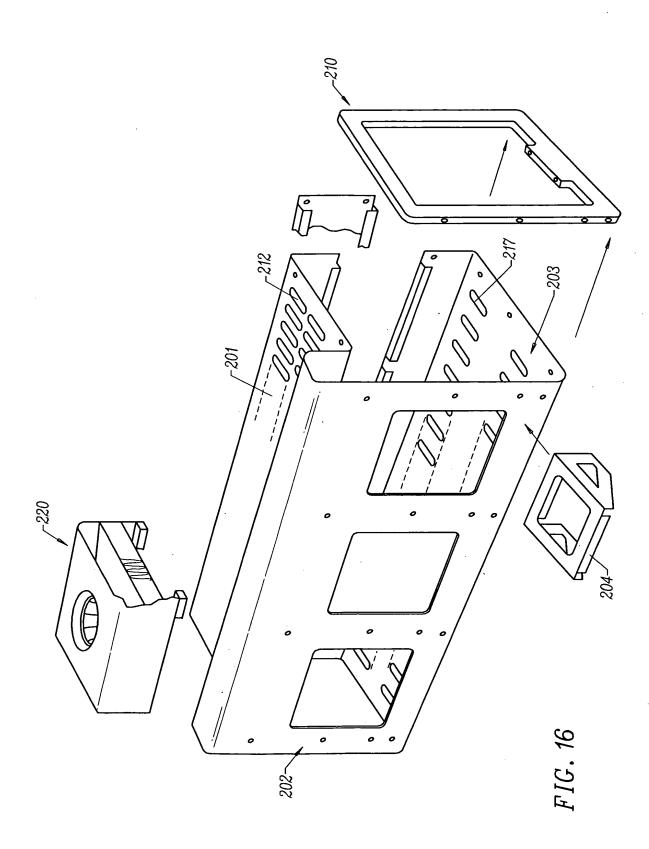


FIG. 15

WAFER ENGINE No.: ASYS8196US0

Jo.: Unknown
Comm No: Unknown
Filed: Herewith

Inventor(s): Anthony C Attorney: Scott D. Sa Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 16 of 35 ra et al.



WAFER ENGINE ASYS8196US0 Unknown Title: Doc Conf. Filed: Unknown Herewith

Inventor(s): Anthony C. B Attorney: Scott D. Sanfa Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 17 of 35

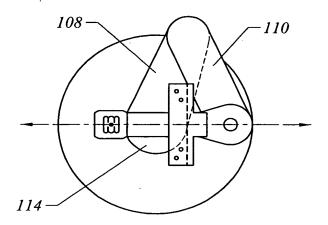


FIG. 17A (Prior Art)

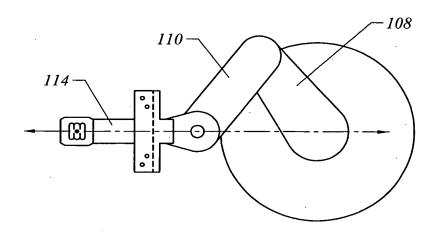


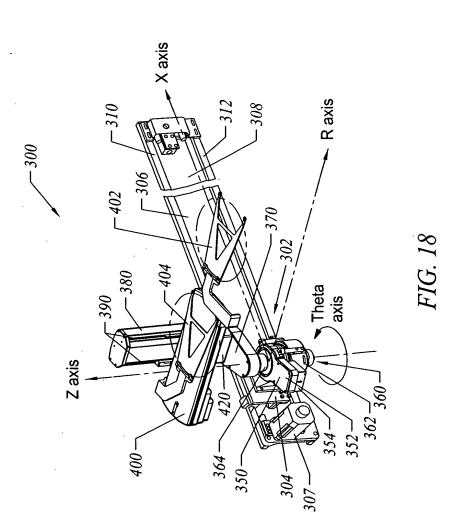
FIG. 17B (Prior Art)

Title: Filed:

WAFER ENGINE at No.: ASYS8196US0 No.: Unknown m No: Unknown Herewith

Inventor(s): Anthony C Attorney: Scott D. Sa Phone: (415) 362-3600 Express Mail No.: EL670726207US ra et al.

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WAFER ENGINE No.: ASYS8196US0 L: Unknown Title: Unknown Herewith Com. Filed:

Inventor(s): Anthony C. Bara et al Attorney: Scott D. San Phone: (415) 362-3 Express Mail No.: EL670726207US Sheet 19 of 35 a et al.

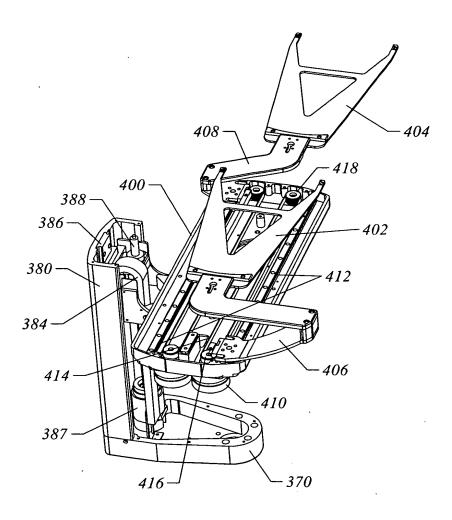


FIG. 19

Title: WAFER ENGINE No.: ASYS8196US0 Unknown Co Filed: No: Unknown Herewith

Inventor(s): Anthony C.
Attorney: Scott D. San
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Sheet 20 of 35 a et al.

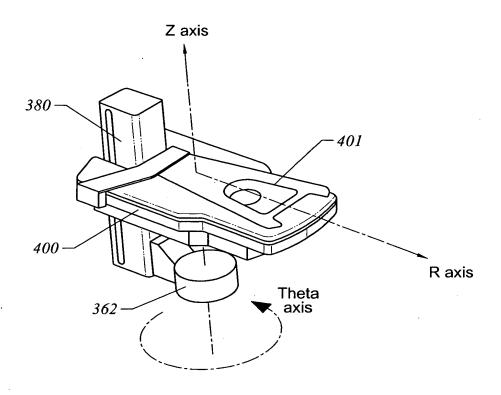


FIG. 20

Title: WAFER ENGINE
Docket No.: ASYS8196US0
Seria Unknown
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Filed: Herewith

Inventor(s): Anthony C. Bon Attorney: Scott D. Sanford Phone: (415) 362-3800 Express Mail No.: EL670726207US

Sheet 21 of 35

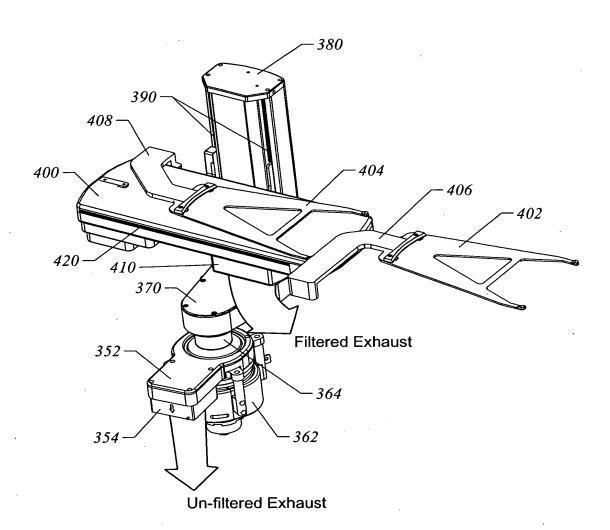


FIG. 21

WAFER ENGINE No.: ASYS8196US0 D.: Unknown Title: Do Con. Filed: Unknown Herewith

Inventor(s): Anthony C.
Attorney: Scott D. San.
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 22 of 35 et al.

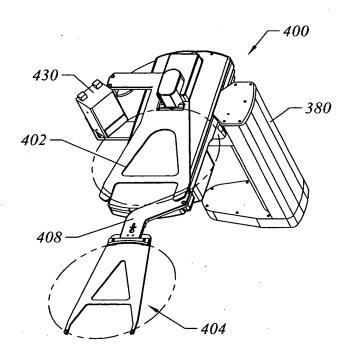
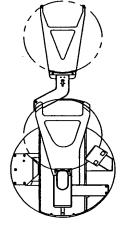
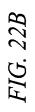


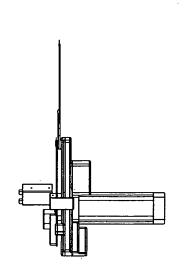
FIG. 22A

Title: WAFER ENGINE
Do Yo.: ASYS8196USO
Set .: Unknown
Contmi No: Unknown
Filed: Herewith

Inventor(s): Anthony C. I Attorney: Scott D. Sant Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 23 of 35







Title: WAFER ENGINE
Docks ASYS8196US0
Seria Unknown
Confirm O: Unknown
Filed: Herewith

Inventor(s): Anthony C. Box Attorney: Scott D. Sanford Phone: (415) 362-3800 Express Mail No.: EL670726207US

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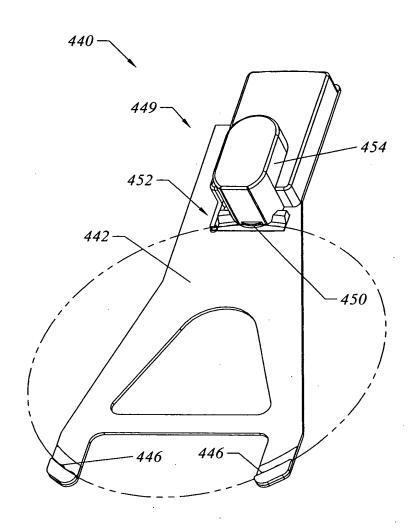


FIG. 23

Title: WAFER ENGINE
Documents: ASYS8196US0
Select:: Unknown
Confirm No: Unknown
Filed: Herewith

Inventor(s): Anthony C. Det all
Attorney: Scott D. Sanf
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 25 of 35 et al.

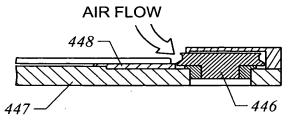


FIG. 24A

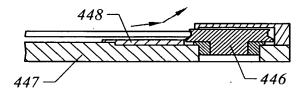


FIG. 24B

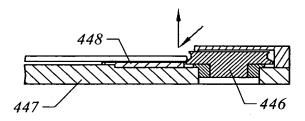
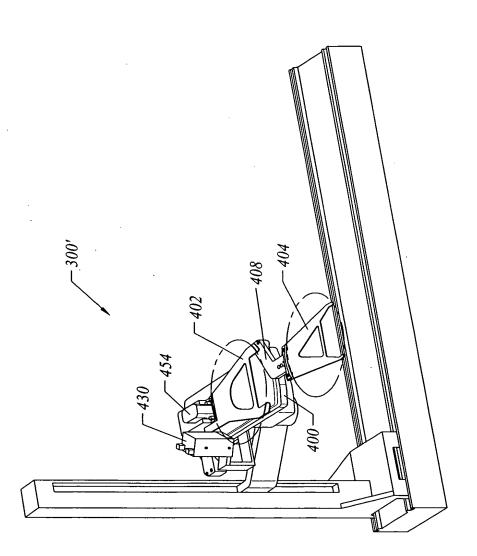


FIG. 24C

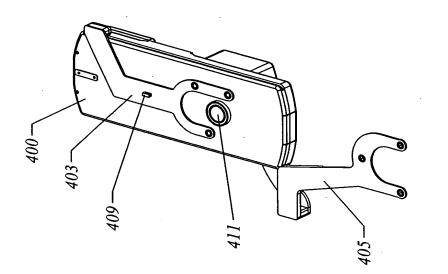
Inventor(s): Anthony C. B Attorney: Scott D. Sanfo Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 26 of 35

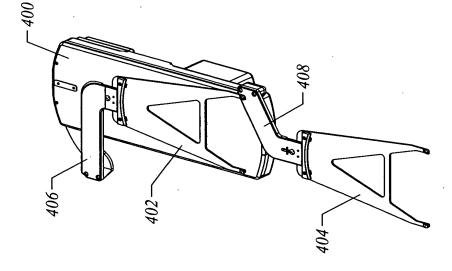


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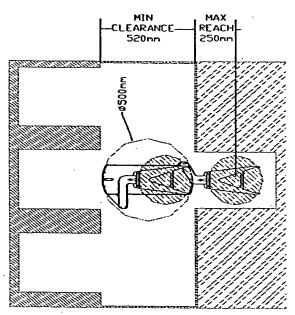
Inventor(s): Anthony C. a et al Attorney: Scott D. Sar Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 27 of 35

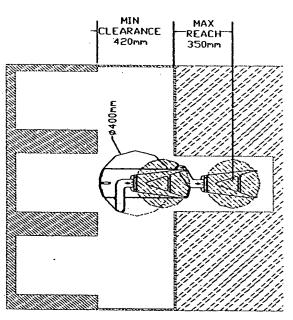




Title: WAFER ENGINE Docket No.: ASYS8196US0 Unknown No: Unknown Herewith

Inventor(s): Anthony C. Bonora et al.
Attorney: Scott D. Sar
Phone: (415) 36.
Express Mail No.: EL670. 26207US
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FK.27B

Process Tool

EFEM

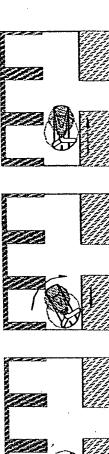
Conventional Linear Slide Robot

Off-Center Silde-Body (50mm offset)

WAFER ENGINE ASYS8196US0 Unknown Unknown Herewith Title: Doc Se Con Filed:

Inventor(s): Anthony C. B Attorney: Scott D. Sant Phone: (415) 362-3 Express Mail No.: EL670726207US

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4) move X axis forward toward process station 3) rotate theta axis and move X axis back to avoid colision

2) retract radial axis

I) lift wafer at load port 1

2) walt for process to complete

S) rotate theta axis and move X axis

Process Tool

EFEM

Swap processed wafer for new wafer ready for process

s) retract radial axes, move X and Theta

et al.

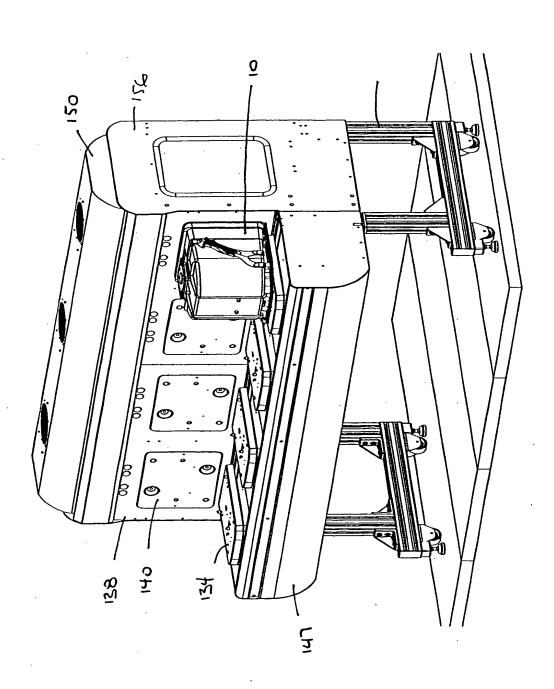
FLC. 28

Example motion sequence for rapid swap slide-body with off center rotation axis.

Title: Dock Seria Unknown
Confini No: Unknown
Filed: Herewith

WAFER ENGINE ASYS8196US0

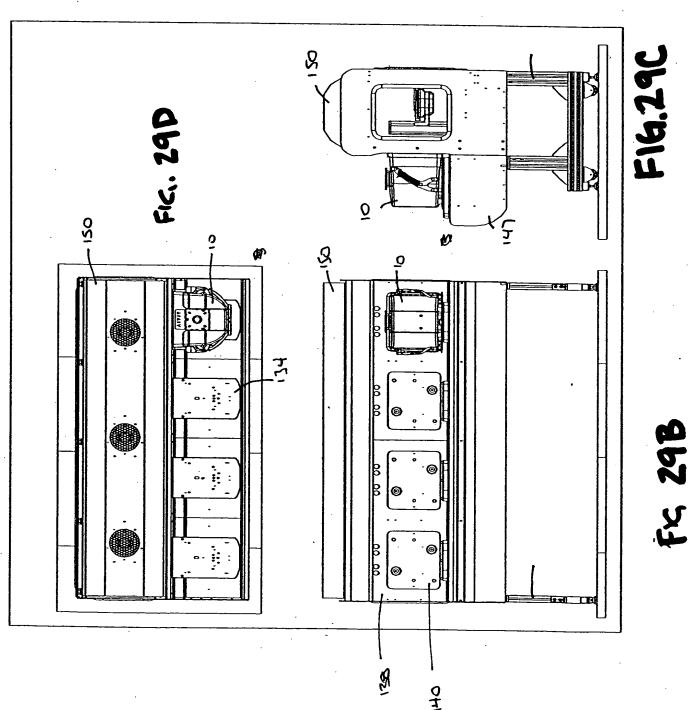
Inventor(s): Anthony C. Box Attorney: Scott D. Sanfor Phone: (415) 362-3800 Express Mail No.: EL670726207US Sheet 30 of 35



Title: Consti

WAFER ENGINE No.: ASYS8196US0 Unknown Unknown Herewith

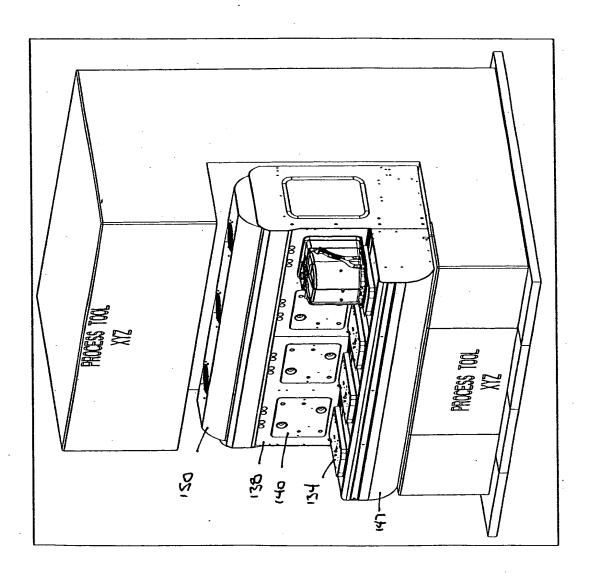
Inventor(s): Anthony C.
Attorney: Scott D. Sai
Phone: (415) 362-3800
Express Mail No.: EL670726207US
Sheet 31 of 35



Title: Dock Seria Confi-Filed:

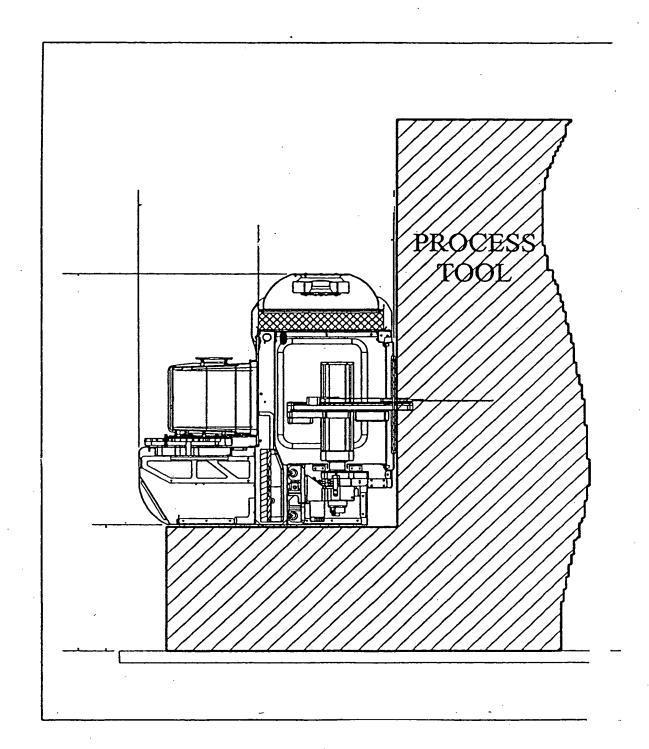
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Inventor(s): Anthony C. Bon Attorney: Scott D. Sanfor Phone: (415) 362-380 Express Mail No.: EL670726207US Sheet 32 of 35



WAFER ENGINE No.: ASYS8196US0 Unknown in No: Unknown Herewith Comm Filed:

Inventor(s): Anthony C.
Attorney: Scott D. Sar
Phone: (415) 362Express Mail No.: EL670726207US
Sheet 33 of 35 ra et al.

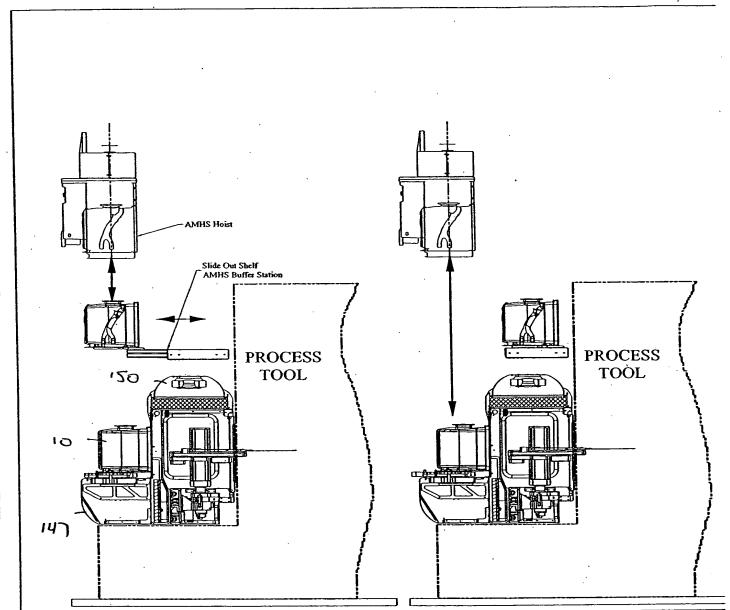


F16.30B

Title: WAFER ENGINE
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S.: Unknown
Co. No: Unknown
Filed: Herewith

Inventor(s): Anthony C. Para et al. Attorney: Scott D. San Phone: (415) 362-Express Mail No.: EL670726207US

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F16.31